LITHOLOGIC :	LOG
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Page	1	of	_10

LOCAT	TION MAP:, ST-5		ST-4 C	luster Cluster
1	ST-2 • \ ST	-1 Cluster • / 	<i>'</i>	
NORTH		1	*not	to scale
	NASA	Well Road		

8W 1/4 SE 1/4 NE 1/4 NW 1/4 S32 T20S R3E NE

SITE ID: NASA-WSTF LOCATION ID: ST-4-589

SITE COORDINATES (ft.):

N 232223.95 E 400481.62

GROUND ELEVATION (ft. MSL): 4494.13' (BC)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary/Air Foam Rotary

DRILLING CONTR.: Larjon Drilling Co

DATE STARTED: 05/06/92 DATE COMPLETED: 05/21/92

FIELD REP.: M. Canayan, D. Menzie

COMMENTS: Mud rotary 0'-85'(12%"). Ream to 16". 85' x 10"

permanent steel surface casing. Air/foam rotary 85'-610'

(9 7/8"). Total depth = 610'.

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	-	Lithologic Description
			Timed by driller	Cuttings 5' intervals 0'-610'	0'-610'	Alluvium (Santa Fe Group): Samples range in color; moderate brown (5 YR 3/4) to
5		20 20 20 20 20 20 20 20 20 20 20 20 20 2	8			light gray (N8). Cuttings range in size from 1.25 inches to less than 0.1 inches (clay and silt). Average cutting size is 0.1 inches. Cuttings are subrounded to angular. Subrounded cuttings are
10			11			formation grains and comprise 20%-60% of samples. Subangular and angular cuttings include blocky formation clasts and chips broken during drilling. Alluvium is unconsolidated to moderately consolidated,
15			8			poorly sorted, pebble to boulder polygenetic conglomerate. Intermittent clay and caliche layers noted. Alluvial clasts consist of dark gray (N3) to light olive gray (5 Y 5/2) micritic limestone,
20			27			white (N9) iron-stained rhyolite, brownish black (5 YR 2/1) sandstone, moderate reddish brown (10 R 4/6) siltstone, light brownish gray (5 YR 6/1) andesite, white (N9) to light gray (N7) quartz, and light
25			17			gray (N7) caliche. Minor amounts of tuff, granite, and quartzite. Andesitic fraction in cuttings increases with depth until alluvium becomes volcanic-rich (≥ 50% of sample) at 440′.
30			9		0'-30'	Cuttings are fairly uniform in size (averaging .10"25") and are angular to rounded.
35			31		30'-45'	Gravel-size grains comprise 90% of non- clay cuttings and range from .5"-1.25" in size. They may be angular to rounded.
40	####WVV/		21			
45			18			
50			25			

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LUCAT 10	N ID: ST-4-589	D., 4334 T.	0 1 7		· Page <u>2</u> of <u>10</u>
Depth	Visual % Lith	Drilling Time Scale: min	Sample Type and Interval		Lithologic Description
	70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	c c	Cuttings (cont'd)		
	20 7 600 20 7 600				
50		25		5 0' -60'	Cuttings similar to 0'-30' in size and sphericity.
	1000 d 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
55		29			
	8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6				
**	0 0 0 0			001 701	Cutting airian to 201 AFI in aire and
60		19		60'-70'	Cuttings similar to 30'-45' in size and sphericity.
	70 60 60 60 60 60 60 60 60 60 60 60 60 60				
65		28	,		·
	6000	** •			
70		33			
		9			
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
75		16			
	5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	2 C			
80		29			
	0 6 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) 6			
85		44		85'-90'	Sample 50% grout.
	0 3 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	start drillograph		85 '	
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8) 24 26			Color and consistency of foam discharge indicate that clay % may be higher than indicated by cuttings sample.
90		5			
		<u> </u>			
95		5			
	7 a c s a	ें भ 0 7			
100		6			
	6 6 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6				
		73 70 10 10			
105		10			
	90,000	d			
110		10			
115		8			
		9			
	9 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6				
	0000	2)		l <u>.</u>	

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Depth	n Visual% Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115		8	Cuttings (cont'd)	
120	9 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5		
125		5		
130	HI HVV Z/Z = 0	6		
135	+ + + + v v Ø o • = • • • • • • • • • • • • • • • • •	9		
140		7		
145	===+1.v@o	6		
150		5		
155		5		
160	######################################	7		
165	######################################	22		
170	++++VVC.23 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10.5		
175		3.5		
180	HHEEVVE.	7		
	9 9 9 9 5 0			

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LOCATIO	ON ID: ST-4-589			Page <u>4</u> of <u>10</u>
Depth	ı Visual% Li	Drilling Time th Scale: min	Sample Type and Interval	Lithologic Description
180		7 2 2 3 4 3 4 5 5 7 3 5 6 7 4 6 7 7	Cuttings (cont'd)	
185		8 6 6 6 8 8		
190	14 HVV /// 12 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	ි දිරි දිරි දිරි දිරි දිරි දිරි දිරි දිර		
195		မော် နော် (၁၀) (၁၀) (၁၀) (၁၀) (၁၀) (၁၀)		
200	++++VVØ: ==	6 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		
205	± + + + v∨⊘o∴≡	8.5		
210		4.5		210' Cuttings average .10"25" and are angular to rounded.
215		3.5		
220	#### VV / ### = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4		
225		5 5 6 6		
230	7 1 1 1 7 2 V 1 9 7 - 7 9 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		
235		0 0		
240		7 7	į	
245		ခြင်း တို့ (၁) တို့ (၁) တို့ (၁) (၁) (၁) (၁) (၁) (၁) (၁) (၁) (၁) (၁)		
	6.6 m	6 6 6 6 7 8 6 6 6 6 6 6 6 6 7		

LOCATIO	ON ID: ST-4-589	<u></u> .	-	<u> </u>	Page <u>5</u> of <u>10</u>
Depth		Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245	######################################		3	Cuttings (cont'd)	
250			3		
255			3		
260	THH FVVSS		6		
265			6		
270	H+H+==VV/66	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7		270'-280' Cuttings decrease to .05"10" in size. Caliche-cemented alluvium present in small percentages.
275	++++viv==3		7		
280	# # # HVV = = 12		4		
285	####VVVV		5		
290			5		
295	####VV000E		7		
300			8		300'-385' Cuttings range from .05"50". Most average .1". Shapes are angular to rounded.
305			8	,	
310	7+++ £ V V © ©	00000000000000000000000000000000000000	7		
		4 P 6 C C C			

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LOCATIO	N ID: ST-4-589				Page <u>6</u> of <u>10</u>		
Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description		
310			7	Cuttings (cont'd)			
315			5				
320	f Helly VV 2	2 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	9				
325	H-H-H-I-V V Ø 5 B	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10				
330	JH++VVØ2.		7				
335	####VV@F #		7				
340			8				
345	#####WN & B		8				
350	++++vvv	2	9				
355	++++ vv v >		7				
360	F+++VVV		7		360'-365' Small percentage (2%) cemented alluvium clasts present.		
365	++++ vvv />		6				
370	++++	40000000000000000000000000000000000000	8				
375	++++ // / / / / / / / / / / / / / / / /		6				
<u> </u>		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					

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LUCAT	TON ID: 51-4-5	103	Deilling Time	Camala Tima		Page <u>7</u> of <u>10</u>	
Dept	h Visual%	Lith	Drilling Time Scale: min	Sample Type and Interval		Lithologic Description	
		00000		Cuttings (cont'd)			
375		4 9 9 9 9	6				
3/3	7777VV	- 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6				
380	FFFFVVV	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8				
385	##### VV V =		11		385'-395'	Samples are a pea-gravel. Grains are uniform in size (.2"4") and are sub- to	
						uniform in size (.2"4") and are sub- to well-rounded.	
390							
330	+++++ VVV :	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	8				
395	77711000		7		395'-405'	"O" symbol represents carbonate-cemented alluvium. Cuttings are .1"5" in	
						diameter and angular to rounded.	
400	77777	22	17				
		7,000,000					
405			9		405'-425'	10% calcite included in limestone	
400			•		405 -435	percentage.	
		0.0000					
410			7		410'-415'	First appearance of andesite in cuttings. Cuttings are finer, averaging .10" and	
		20000				angular to sub-rounded.	
415	 		7				
	┡┋┋						
420	} 		7				
	 						
425	+++++++- V V V		7				
	╒┋						
430	++++++		5				
435		200000 20000 20000	4			ļ	
440		70000					
440			6				
		700000					
		9 6 6 6 6 6					

LOCATI	ON ID: ST-4-589				Page <u>8</u> of <u>10</u>
Dept		Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
440		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6	Cuttings (cont'd)	440'-610' <u>Volcanic-Rich Alluvium</u> : increase in volcanics; predominantly andesite and rhyolite.
445	VVVVV++++		7		
450	YVVVVH++XXX		6		
455	VVVVVFFF		7.5		
460	VVVVVV		3.5		
465	VVVVVV		5		
470	VVVVVVV		5		
475	VVVVVVVV		6.5		
480	VVVVVVV		5.5		
485		الدخادة	4		
490			3.5		
495			3.5		
500			4		
505			4		
	7	\$ 00.00 \$ 00.00			

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LOCATI	ON ID: ST-4-589			Page <u>9</u> of <u>10</u>
Depti	h Visual % Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
	9" p" b	o o o	Cuttings (cont'd)	
505		6 4 5 6 8 6 8 6	-	
510	VVVVVVVV +	6 c 4		
515	VV V V V V V V V V V V V V V V V V V V	4.5		
520	WVVVVVVV	6. 8. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.		
525	VVVVVVVVVV	4.5		
530	VVVVVVVVVV	်ိဳ့ စီ စီ		
535	VVVVVVVVV	5		
540	VVVVVVVVVV	ି 		
545	VVVVVVVVV	3.5		
550	VVVVVVVVVV	10		
555	VVVVVVVVV	7		
560	VVVVVVVVVV	9 9		
565	VVVVVVVVV	6 7 6		
570	20 m	6		
	9 0 0 8 % 9 0 0 8 % 9 0 0 8 % 9 0 0 0 0 0	0 1 1 1 1		

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LUCATIO	עז אנו או: S1-4-589		D-2137		Page <u>10</u> of <u>10</u>
Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
_		0 0 0 0	_	Cuttings (cont'd)	
570	MAN	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6		
		6 0 5 0 5 0 0 0 0 0 0 0 0 0 0			
-25		00000			
575	MANAMAN		15		
		00000			
580	MANANAMA		8		
		00000			
585	VVVVVVV	6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	7		
					
590	VVVVVV	0000	7		
		000000			
595		50000	6.5		
		6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
600			14.5		
605			8		
•		0 0 0 0 0 0 0 0 0 0			
610		00°00°C	6.5		610' = Total Depth by drillograph
615					
	╒┋				
620					
	┡ ╃╃╃╃				
625					
	┞╀╇╂╂╂ ╃				
630					
					
635					
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